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ABSTRACT

Noting that under-utilization of information services and systems in developing countries has recently been confirmed by UNESCO (United Nations Educational, Scientific and Cultural Organization) surveys and studies, this paper discusses problems and issues leading to this under-utilization, and examines approaches and actions that could help improve the utilization of information systems if they were undertaken by international organizations at the national and institutional levels. Definitions are provided of user education, user orientation, and user assistance, and a table is used to make the distinctions clear. Interrelationships between the activities in these three categories and their influences on each other are briefly described. A dual approach to user education is recommended: (1) national information policies and programs should explicitly define policies, programs, and minimum standards on user education; and (2) national educational policies and programs should explicitly set out policies, programs, and minimum standards on school and university library and information facilities and services and user education at all educational levels, including formal and nonformal education. User orientation and user assistance are each discussed in turn. Finally, the environment of, and national and international actions with respect to, computerized information systems are discussed. Seven references are listed. (THC)

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Improving the use of information systems, services and sources through user education and orientation: some issues with reference to developing countries

Prepared by Professor A. Neelameghan

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1. INTRODUCTION

1. Information systems are in theory intended to provide each potential user with timely and relevant information, presented in a convenient form with the least possible cost and effort. Creating an awareness of relevant information sources, enhancing users' abilities to select the more appropriate information sources and systems for a given information need and developing users' knowledge and skills to retrieve or access the information required and, if necessary, for post-retrieval processing and repackaging of information for effective use, all form integral parts of the user-information system interface. However, no existing information system has yet attained the full realization of all aspects of this service.

2. In practical terms these deficiencies frequently lead to under-utilization of information systems, services and sources on the one hand and to the failure of users to obtain timely, relevant and easily usable information, on the other. In turn, it creates a gap between the information personnel's perception and user's perception of the efficiency and effectiveness of information systems.

3. Better performance and utilization of an information system could result from an 'understanding' of the system--its information resources, functions, capabilities and method of operation--by its users. Such an understanding, in turn, could come from users' participation in the design and development of the system itself at different stages. Two decades ago the Weinberg Report emphasized this point. However, for a variety of reasons, the user community is still seldom involved in design and development of information systems and services. Existing user orientation programmes are intended to make the user-information system interface more productive and to improve the use of information systems; but again for various reasons, these programmes are either inadequate, or carried out very infrequently. Hence, the related problems of the poor utilization of information systems on the one hand and of users not obtaining relevant, reliable, timely information on the other, continue to exist and are becoming increasingly critical.

4. These problems and issues have been recognized for a number of years now, but no satisfactory solutions have been found. This is especially true in the developing countries as recent Unesco surveys and studies have confirmed (2, 3): In these countries evidence of under-utilized information services abounds and a number of factors contribute to the situation. For instance:

the non-motivation (even lack of interest) of many potential users which is often in large part due to educational, social and cultural factors. The educational process, whether at school or higher education level, is seldom information-oriented. Scientific and academic research as conducted often does not follow the pattern that prevails in industrialized countries which tend to be high information users. In many developing countries systematically-organized information, especially technical information, has not been accepted as an important objective and is still playing a relatively small role in the general flow of communication. As a result, the technical reading habits of would-be users are restricted. The fact that much of the available technical information is often in foreign languages also presents serious difficulties;

policy-makers, planners and administrators of national development are only slowly recognizing the importance of data and information for economic and social development and in development planning;

the introduction of modern information services in developing countries which has tended to be based on, or grow out of, traditional library services with insufficient practical orientation to the needs of users, who are many and varied;

studies on users and use of information are expensive and tend to be conducted only occasionally;

there appears to be little systematic effort to attract users by explaining how to use the information services;

only rarely are users involved in the development and operation of information services;

little effort is put into marketing of services, many of which are simply not known to potential users;

referral services to guide users to suitable sources of information are not adequately developed;

little evaluation of services is done, though research has shown that in some countries certain services are unsuited to their intended purpose and therefore ineffectual (2).

5. This paper considers some approaches and actions to be made by international organizations, and at the national and institutional levels that could in time improve the utilization of information systems. The issues are complex and involve multi-faceted thrusts and activities.

6. Some of these approaches and actions have already been proposed in seminars or studies organized or undertaken by Unesco. Aspects of certain of these ideas which follow can be found in the frequently-cited final reports of seminars on the education and training of users of scientific and technological information held during October 1976 in Bangkok and Rome (+), notably in the section on 'Recommendations' included in the latter report. The reader may also be reminded of passages from T.D. Wilson's Guidelines for Developing and Implementing a National Plan for Training and Education in Information Use (1981). Finally, the reader should keep in mind Education and Training of Users of Scientific and Technical Information: UNISIST Guide for Teachers which was published in 1977.

2. DEFINITIONS

7. The terms 'user education', 'user orientation' and 'user assistance' overlap, and are sometimes used interchangeably. For the purposes of this discussion, distinction is made among these categories of activities. Table I attempts to make these distinctions clear. User orientation and user assistance activities are undertaken in the framework of a specific information system or service, while user education connotes a more general educational activity, not limited to any particular information system. User assistance usually refers to helping the individual user rather than a group. The activities in these three categories are interrelated and influence each other. For instance, an effective user-education programme can enhance the effectiveness of user-orientation; and a better knowledge of a particular information system developed through user-orientation can help enhance user's awareness and knowledge of information sources and systems. Similarly, a good user-oriented programme could facilitate the efficiency and effectiveness of user-assistance.

(+) UNISIST Seminar on the Training of Users of Scientific and Technical Information: Analysis and Evaluation of UNISIST Guidelines. 14-15 October 1976. Bangkok, Thailand. Final Report. Paris: Unesco 1977. (SC-77/WS/8)

UNISIST Seminar on the Education and Training of Users of Scientific and Technological Information. 18-21 October 1976. Rome, Italy. Final Report. Paris: Unesco. (SC-77/WS/22)

8. As used in this paper 'user orientation' covers two subcategories of interrelated activities:

(a) familiarizing users with a particular information system or type of system;

and

(b) design of information systems to meet the requirements of their user clienteles.

Meeting 'user requirements' covers:

the provision of relevant, reliable and timely information;

the presentation of information in the manner, form or package most helpful to the user; and

making the system 'user friendly' that is, ensuring that the user's interaction with the system will be direct, simple, convenient and comfortable.

Table 1. DIFFERENTIATION OF USER EDUCATION, USER ORIENTATION AND USER ASSISTANCE: Examples

User Education	User Orientation	User Assistance
Development of the motivation, propensity and potential for seeking and using information for problem-solving, development and self-educational purposes.	Provision of guidance for understanding the features of a specific information system or type of information system in relation to users' needs.	Help in understanding the subject coverage, limitations, etc. of a specific information source or data-base.
Creating awareness of the availability of information relevant to different needs and situations.	Provision of guidance on the specific information sources accessible through a specific system.	Help in interpreting the data elements in an entry in a catalogue or a display on a visual display unit.
Creating awareness of the availability of different tools for and approaches to information searching and accessing.	Provision of guidance in the use of specific tools (e.g. catalogue, thesaurus, terminal operations) used in specific information system(s).	Assistance in abstracting, or repackaging work on information retrieved in relation to a specific query.
Developing the ability to extract, synthesize and repackage information to suit individual needs and convenience.	Developing familiarity with the outputs obtainable through a specific system.	

3. USER EDUCATION

3.1 A dual approach

9. As mentioned earlier, user education is essentially part of the education of the individual rather than a purely library/information system activity. At present a double approach to user education seems necessary.

10. On the one hand, national information policies and programmes should explicitly set out policies, programmes and minimum standards on user education for the guidance of educational institutions--schools, colleges, etc. Similarly, national educational policies and programmes should explicitly set out policies, programmes and minimum standards on school and university library and information facilities and services and user education at all educational levels, covering formal and non-formal education. Such a dual approach worked out in co-ordinated fashion by the 'information sector' management and the 'education sector' management could provide and ensure, in the long run, especially in developing countries, a firm basis for effective user orientation and more productive utilization of information resources, systems and services in all areas of human endeavour.

11. International organizations, both governmental and non-governmental, concerned with information service promotion and development and/or with educational development should collaborate:

to organize and support international, regional and national seminars and workshops for managers of educational systems to discuss this dual approach and the formulation in the two sectors of appropriate policies and programmes on user education especially oriented to primary- and secondary-level education;

to sponsor and support the preparation of guidelines on user education at the institutional and national levels; these should cover policy, programmes, model curricula, materials and procedures with special reference to the needs of developing countries;

to support and facilitate the extensive dissemination of the guidelines and their implementation as a matter of priority at the national and to the extent possible, at the institutional level;

to ensure that assistance to Member States (consultancy missions, financial assistance, etc.) for school library development and school education development, incorporate assistance for user education activities, including demonstrations, preparation of user education materials, research and studies etc.;

to support research and studies on the information-seeking and information-use behaviour of various categories of users, especially children in different environments, the planner-manager category of users, the educated 'general public', workers with minimal literacy, people at the grass-roots level and other groups which together constitute a sizeable proportion of the human resources in developing countries but who now appear to receive minimal benefits from conventional library facilities;

to support studies for the formulation of supplementary and alternative approaches to user education for the special groups based on the findings of research suggested under item 5 above.

12. These proposals are in the tradition of the thinking of such educationists as John Dewey and library scientists as S.R. Ranganathan who recognized long ago the importance of integrating the school education of children with their library education and the structure of curriculum and educational activities around school library activities.

3.2 Sensitizing development officials - the special case

13. The frequent inadequacy or non-existence of user education programmes as an integral component of educational programmes at the school and higher education levels and the consequent poor effectiveness of user orientation efforts within particular systems, results in the serious problem of low use by development officials of information to support national development and its planning. This leads in turn to the prevailing poor support of information systems by development planners and managers. Increasing the quantity of information supply does not automatically improve information use. Attention needs to be focused on the problems of user requirements and convenience, on the quality of information provided, on the appropriate presentation of information to different user categories and developing workable methods of sensitizing development officials in the use of information for problem-solving, gainful decision-making, planning, monitoring, directing and evaluation activities.

14. There is an urgent need, especially in the developing countries, to identify more effective ways and means to maximize the commitment among high-level development officials to the use of information for development. International meetings supported by international organizations, with the participation of development officials and information specialists can provide a forum to discuss the role of information in development, the development of effective means for stimulating demand for information and means of delivering the needed information at the national and institutional levels. In the long run, such stimulation of information use by development officials could lead to more positive support of information systems and services.

15. International agencies, such as Unesco, can help by developing material on the methodology of experimentation as well as by providing financial support for demonstrations of information use stimulation. Advice and assistance are also needed in the formulation of policies to guide long-term action for motivating users in developing countries. Such actions may initially concentrate on the factors that are external to the information system but influence the information seeking and information use behaviour of development officials--planners, managers, etc. For instance:

educational, social and cultural factors;

the ways in which their work is organized;

their own perception of needs;

their attitudes towards available services;

the ways in which they try to obtain information and data in different need-situations;

the specific difficulties they face in getting the needed information that lead to frustration.

4. USER ORIENTATION AND USER ASSISTANCE

16. User orientation--that is, both the orientation of systems to users' requirements and orientation of users to systems--are continuous processes at the individual and group levels. Continuous user involvement is required in both types of activities. However, in the conventional approach to library system development, the studies of user needs, if any, are usually carried out at the start of system planning and are limited to identifying relevant information sources; there may be only an occasional user survey to study the impact of the services(2). Effective mechanisms for frequent or continuous feedback on user reactions, problems and needs are seldom built into these systems. Hence, as changes occur in the user environment, the library system tends to become less and less oriented to actual user-requirements and progressively less able to meet the changing needs. And this, in turn, leads to less and less utilization of the system(+).

17. For a number of reasons, including that of expense, staff are not adequately trained for these tasks. Often when only a small number of professional personnel is available, user-orientation programmes are either not organized at all, are poorly done, or arranged infrequently as for example, for first-year students at the start of the school year in a school or university library system. This undesirable situation requires remedies at various levels. Among these could be:

focusing attention on the wide range of user needs and designing and developing systems which incorporate continuous user participation;

adopting as a matter of institutional policy and practice marketing strategies and techniques for promoting the use of information systems, services and resources. User orientation and assistance then inevitably become important tactics in the marketing strategy. Necessary for success will be allocation of adequate funds for all the components of the marketing programme--for personnel training, market identification, promotional activities, for equipment and the preparation and use of various aids such as audio-visual materials;

designing programmes and activities for orientation of users of information systems and user-assistance activities to serve (a) as means of obtaining information on user reactions to the services, their problems and changing requirements and also (b) for familiarizing users with the system. Past experience with such multiple use of user orientation programmes has been quite productive. It facilitates economizing on the organization of separate user needs and reactions, surveys and user orientation programmes;

organizing periodic seminars, workshops and demonstrations on user orientation and assistance for library and information personnel and for teachers of library and information science at the subnational/sectoral, national, regional and international levels(++);

'user orientation and assistance' should become an important module in library and information science courses;

(+) In connection with studies of user needs attention is called to the Guidelines on Studies of Information Users (Pilot version) prepared by G. Ford and C. Harris. Paris: Unesco 1981. (PGI/81/WS/2), on which comments to assist with the preparation of a definitive edition are still sought.

(++) A Regional Seminar on Information User Orientation - Needs, Methods and Trends will be organized in Manila, Philippines, from 2 to 12 November 1982.

good orientation programmes, materials, kits and packages should be identified to serve as models. In-service training of information personnel in the use of such programmes could be supported. Materials, kits and packages may be made available for use in regular training programmes, for demonstrations, for adaptation or to serve as models for developing user-orientation programmes especially in the developing countries. National information system development programmes could sponsor and provide support assistance for survey-inventories at the national level and for the exchange of such aids and materials. International support could help widen the coverage of the inventory and exchange activities;

mediated library instruction, i.e. instruction using media (films, slides, audio-tapes, videotapes, etc.) could be particularly effective if carefully planned and appropriately used (7). Research, discussion, exchange of experience, and provision of guidelines in these techniques with special reference to developing countries are worthy of national and international support.

5. COMPUTERIZED INFORMATION SYSTEMS

5.1 The environment

18. The growing number of information sources files (data bases) in computer-readable form covering a wide range of subject-fields, improved capability for frequent updating of data bases, development of powerful time-sharing computer facilities, interactive 'user-friendly' systems and transportable software packages, rapid access storage devices, and a steady decline in the cost of data storage, availability of less expensive intelligent terminals and the global extension of telecommunication networks, have all contributed to the enhancement of online information access facilities. Institutions also find it useful to develop data-bases and information storage and retrieval systems for specialized materials and local data as well as to computerize some of the library routines. Thanks to developments in microprocessor technology and appropriate software, even small institutions can now hope to possess computer facilities at a cost within their reach. These trends have their impacts in developing countries--the growing number of applications of computers in library and information work; online access to remote databases; and obtaining computer-readable databases produced elsewhere and providing local services (SDI, retrospective search, referral, etc.) based on them. International organizations, such as Unesco, have often encouraged and supported such activities where viable.

19. The new technologies provide a means of beating, as it were, the 'information explosion'. Nevertheless, they also pose new problems and challenges. Manpower and other resource limitations, socio-cultural and administrative constraints; and the situation brought about by the fact that most of the technologies, equipment, telecommunication facilities, software, databases and expertise are produced in a few industrialized countries, all contribute to the challenges of technology transfer to developing nations. These issues have been the subject of discussions at a number of seminars and conferences at the national, regional and international levels. Although the issues of improving the use of computerized systems also have to be viewed in a broader perspective, for the present meeting we limit considerations to the user-orientation aspects with special reference to developing countries.

20. Normally, user orientation and assistance activities are independent of regular library/information centre services and are provided by the staff in anticipation of the need for such orientation or as the need arises or at the specific request of users. In computerized systems, however, the training/guidance

feature can be built into the system so that a user can himself call for the self-instruction or self-guidance feature at any time when using the system. Such self-instruction may be available in the form of an interactive 'tutorial' or 'help' feature. Increasingly computerized systems have such capability as a useful built-in 'friendly' feature. The task of the orientation staff is then to assist the client in the use of the 'tutorial' or 'help' feature.

21. Producers and providers of databases and online services also provide training kits (manuals, audiovisuals) and simulation packages, as part of their promotional and marketing effort. Such materials, aids and packages are also produced independently by library/information science schools or other agencies. Some of these kits and packages can be used or adapted for orientation programmes.

22. There is an accumulation of experience and research findings on the difficulties faced and errors committed by users and on the inadequacies of online systems and services (4, 5). These provide useful ideas for improvements to the systems as well as on the factors to be emphasized in user orientation to interactive online search.

23. The lack of adequately trained personnel to develop efficient, effective and 'user-friendly' computerized systems and online services, to train others in such systems and to provide user-orientation, is one of the more serious barriers to the spread of the use of computerized information systems in developing countries. The limited availability or non-availability of low-priced equipment and software for operation and training purposes is another constraint. International organizations--intergovernmental and non-governmental--have been supporting projects and programmes to find solutions to some of the problems.

5.2 National and international actions

24. In Section 4 on User Orientation and User Assistance a number of activities at the national and international levels that could help improve the productivity of user orientation efforts have been mentioned. Those broad lines of approach or strategies are equally relevant for improving the use of information systems and services using modern technology, such as computers and telecommunications.

25. Additional and continued support and investments are needed for wide ranging and intensive national and international actions in several directions. For instance:

to increase the technological component of professional education in library and information science;

to identify, evaluate and advise on and, where appropriate, make available to library systems and library/information science courses instructional aids, kits and packages on computerized systems for training of specialists and users;

to support and assist institutions in developing countries, in the development of low-cost computerized systems, local data bases, online access facilities, user instructional packages (manuals, audio-visual aids, simulation) etc. to undertake research into user-behavioural characteristics in using modern technology-based systems. Such investments may not, in some cases, produce immediately visible results--that is, the progress may be slow because of many constraints and difficulties at various levels. But in the long run it will provide a firmer base for developing self-reliance and confidence among both professionals and users in the application of modern information technology appropriately and with relevance to their needs and environment;

to encourage and facilitate inter-institutional co-operation within the country and internationally in making available materials, expertise, instructional kits/packages, etc. between library information science schools and between them and information centres and services. The Unesco-UNDP regional training course for science information specialists at the University of the Philippines Institute of Library Science in Manila has benefited from such arrangements and has produced, in turn, beneficial results for the collaborating institutions;

to widen the scope of experimental and demonstration projects, with special emphasis on relatively inexpensive technology, such as micro-computers, computer microform systems etc. and utilizing converted television sets as these become available in developing countries.

26. Regional projects such as the Asian Programme of Educational Innovation for Development (APEID) located at Bangkok could give more attention to innovative approaches to user-education and user-orientation as integral parts of their programmes and activities in the field of educational innovation.

27. Agencies such as Unicef and Unesco have been involved in programmes and in developing guidelines for the design and provision of teaching aids and educational equipment (for example 6). Teaching aids in the training of information professionals and for use in user education and user orientation could with advantage be included within the purview of their programmes. Expertise from the educational field and from the information systems field should both be brought to bear on the issues of user education and user orientation for the formulation of appropriate strategies and the preparation of guidelines for wide dissemination to educational institutions and programmes.

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